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SECOND  
ANNUAL REPORT

OF THE

BOARD OF DIRECTORS

OF

The North Pennsylvania Railroad Company,

WITH THE

PROCEEDINGS OF THE ANNUAL MEETING OF STOCKHOLDERS

AND THE

REPORT OF THE CHIEF ENGINEER.

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JANUARY 8, 1855.

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1855.



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## SPECIAL MEETING.

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Office of the North Pennsylvania R. Road Co.

*Philadelphia, July 10, 1854.*

Pursuant to notice, according to law, a Special Meeting of the Stockholders of the North Pennsylvania Railroad Company, was held this day.

Mr. HARRY CONRAD was called to the chair, and J. GILLINGHAM FELL appointed Secretary.

On motion of Mr. Thomas S. Fernon, it was

*Resolved*, That the Act of the General Assembly of the Commonwealth of Pennsylvania, entitled "An Act relative to the North Pennsylvania Railroad Company," approved the seventeenth day of April, one thousand eight hundred and fifty-four,

And also,

"An Act relative to the North Pennsylvania Railroad Company," approved the eighth day of May, A. D. 1854, be and

the same are hereby accepted, and adopted into the charter of the North Pennsylvania Railroad Company.

On motion of Mr. Thomas S. Fernon, it was

*Resolved*, That the capital stock of the North Pennsylvania Railroad Company be and the same is hereby increased to, and shall consist of, one hundred and twenty thousand shares.

On motion, the meeting adjourned.

J. GILLINGHAM FELL,  
*Secretary.*

# ANNUAL MEETING.

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Office of the North Pennsylvania R. Road Co.

*Philadelphia, January 8, 1855.*

Pursuant to notice, according to law, an Annual Meeting of the Stockholders of the North Pennsylvania Railroad Company was held this day at the office of the Company.

On motion of Mr. Algernon S. Roberts, Mr. SAMUEL V. MERRICK was called to the chair, and EDWARD ARMSTRONG appointed Secretary.

Mr. Thomas S. Fernon, President of the Company, submitted and read the annual report of the Board of Directors.

When, on motion of Mr. Robert V. Massey, it was

*Resolved*, That the said report be accepted and published.

The annual report of the Treasurer was then read, and, on motion, accepted.

The Secretary then read the report of the Chief Engineer, when, on motion it was accepted and ordered to be published, with the reports of the President and Treasurer.

The President of the Company submitted the following communication:—

CLERK'S OFFICE, SELECT COUNCIL,  
*Philadelphia, January 4, 1855.*

At a joint convention of Councils held this day, the following persons were duly elected Directors of the North Pennsylvania Railroad, on the part of the City :

HARRY CONRAD, Esq.,  
ROBERT V. MASSEY, Esq.

EDMUND WILCOX,  
*Clerk of Select Council.*

To THOMAS S. FERNON,  
*President of the North Penna. R. R. Co.,*

On motion of Mr. Thomas S. Fernon, it was

*Resolved*, That the provisions of the seventh section of the Act of Assembly, entitled "An Act to consolidate the Lackawanna and Western and Delaware and Cobb's Gap Railroad Company, approved the eleventh day of March, A. D. one thousand eight hundred and fifty-three, comprising a part of the charter of the "Delaware, Lackawanna and Western Railroad Company," is hereby accepted, and made a part of the charter of the North Pennsylvania Railroad Company.

The Chairman then announced that Messrs. Rodolphus Kent, Charles Santee and Charles S. Ogden, had been appointed by the Board judges of the election.

When, on motion of Mr. Algernon S. Roberts, it was

*Resolved*, That the meeting adjourn, for the purpose of proceeding to elect a President and ten Directors, to serve during the ensuing year.

EDWARD ARMSTRONG,  
*Secretary.*

At a meeting of the Stockholders of the North Pennsylvania Railroad Company, held this day, the following persons were unanimously elected to serve as President and Directors for the ensuing year:—

PRESIDENT.

THOMAS S. FERNON.

DIRECTORS.

ISAAC S. WATERMAN,  
JOHN BROCK,  
JOHN WELSH,  
CHARLES W. CHURCHMAN,  
J. GILLINGHAM FELL,

ISAAC R. DAVIS,  
DAVID S. BROWN,  
ALGERNON S. ROBERTS,  
JOHN O. JAMES,  
JOHN ELY.

RODOLPHUS KENT,  
CHARLES SANTEE,  
CHARLES S. OGDEN,

*Judges.*

Office of the North Pennsylvania R. R. Co.,  
*Philadelphia, January 8, 1855.*



## SECOND ANNUAL REPORT.

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**To the Stockholders of the  
North Pennsylvania Railroad Company.**

GENTLEMEN:—

The Board respectfully present their report for the eleven months terminating November 30th, 1854.

*Fiscal Year.*—The period intervening between the 31st of December, the end, heretofore, of the fiscal year, and the second Monday in January, the time fixed by law for the annual meeting, affording insufficient time for the adjustment of the accounts, your Board changed the termination of the fiscal year to the 30th of November.

*Action of the Board.*—The prevailing depression in monetary affairs having occurred at a time when this Company had already expended a sum so large as to render it altogether injudicious to cease operations on all the sections in progress, your Board were admonished to take such action as would lessen the current expenditures, and yet not defer the completion of the road by an

indiscriminate disbanding of forces employed upon consecutive sections, without considering the relative amount of work remaining to be done upon them; or, at any rate, not to interpose any hindrance to the completion of that portion of the road from Willow street to the Plymouth road, in Montgomery county.

With one-third of the main road in operation, through a populous and productive country, the Company may earn a revenue to pay interest on cost of construction, within that limitation. Therefore, the sections upon which work has been temporarily suspended, comprise portions of the main road north of the point to which the cars will run in the ensuing spring; and work may be resumed upon them, hereafter, whenever the paramount interests of the Company shall warrant and the state of the treasury justify their prosecution. If, after several months shall elapse, the work upon them be renewed, they may still be completed simultaneously with the more difficult and costly sections, upon which, thus far, the work has been kept in steady progress.

*Subscriptions.*—On the 30th November, 1854, the subscriptions made to the capital stock of this Company were in this amount, to wit:

Subscribers.	Shares.	Amount.
City of Philadelphia, - - - - -	28,000	\$1,400,000
Bank and Insurance Companies, - - - - -	1,250	62,500
Individuals, including Contractors, - - - - -	21,812	1,090,600
Total, - - - - -	51,062	\$2,553,100
On the 31st day of December, 1853, as per last annual Report, the subscriptions were - - -	30,772	\$1,538,600
Increase in eleven months, - - - - -	20,290	\$1,014,500

In payment of the municipal subscriptions, bonds were received in the amount and on the date here given, to wit:

1853—Sept. 17th, from District of Spring Garden, - - -	\$50,000
“ “ 30th, “ “ “ “ - - -	100,000
“ Dec. 15th, “ City of Philadelphia, - - -	150,000
1854—Feb. 2d, “ District of Richmond, - - -	250,000
“ “ 4th, “ Northern Liberties, - - -	500,000
“ March 15th, “ City of Philadelphia, - - -	100,000
“ May 30th, “ “ “ - - -	250,000
	<u>\$1,400,000</u>

The districts of Philadelphia having been merged in the consolidated city in June, 1854, an ordinance was passed by Councils authorizing the exchange of district bonds for the bonds of the city, so that all transfers made in the city treasury department are recorded as transfers in Philadelphia city loan. These certificates of city loan, though exempt from all local tax, are subject to a State tax of three mills on the dollar, which places them, in a foreign market, in unfavorable contrast with city securities issued in other States, and, practically, confines their negotiation, almost exclusively, to the home market. This fact, along with one other significant fact, that city certificates were also issued in large amount to other companies, with very brief intervals between the dates of issue, tended to weigh down the market and depreciate prices. Hence your Board have not been able to secure for city bonds par value, in the average of sales made to the end of the fiscal year.

From the individual subscribers nine instalments have been called in.

The net proceeds of the subscriptions for capital stock will be less than was anticipated at the time they were made.

The estimates for graduation presented to the Board subsequent to the estimate "for a first class double-track road, without temporary structures," submitted anterior to the first allotment or contracts, exceed it, and being of later date, are doubtless more correct in the totals given of probable cost.

*Branch Road to Doylestown.*—The sections comprising the branch road to Doylestown, have been allotted in one contract, and orders given to proceed with the work.

It is the expectation of your Board to have the branch road to Doylestown opened simultaneously with the main road south of the junction.

*Business Connections.*—As your road, when completed to the Lehigh river, with the Lehigh Valley Railroad, which it will there intersect, will establish a continuous line to Easton, the coal mines, and all intermediate points in the Lehigh valley, it is to

the interest of both companies that reciprocating terms should be entered into, providing for the avoiding of transshipments and the removing of hindrances to their working as one line to and from Philadelphia. Accordingly, the Board took measures to ascertain the views of the Lehigh Valley Railroad Company, in the premises, and, from the response received, have reason to anticipate their co-operation in effecting a business union, alike advantageous to both companies and to the people of this city and the Lehigh valley.

By order of the Board of Directors,

THOMAS S. FERNON, *President.*

Office of North Pennsylvania R. R. Co.,  
*Philadelphia, January 6, 1855.*

## TREASURER'S REPORT.

The amount received from Stockholders, in payment of

Instalments,	-	-	-	-	\$2,121,870 00
Received from Loans,	-	-	-	-	484,689 18
					<hr/>
					\$2,606,559 18

Amount expended—

Real Estate, Right of Way, Fencing,					
&c.,	-	-	-	-	\$355,287 81
Graduation, Bridges, Masonry, &c.,					961,114 78
Superstructure, Rails, Chairs, Sills, &c.,					116,169 69
Engineering Expenses,	-	-	-	-	86,321 22
Stations, Machine Shops, Cars, Tools,					
&c.,	-	-	-	-	42,621 36
Printing and Advertising, Rent, Fur-					
niture, Office Expenses,	-	-	-	-	9,992 64
Interest to Stockholders,	-	-	-	-	37,851 68
					<hr/>
					1,609,359 18
					<hr/>
Balance in hands of the Company,	-	-	-	-	\$997,200 00
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WILLIAM WISTER,  
*Treasurer.*

Philadelphia, January 8, 1855.



# SECOND ANNUAL REPORT

OF THE

# CHIEF ENGINEER.

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**To the President and Directors  
of the North Pennsylvania Railroad Company.**

GENTLEMEN;—In my first annual report, I endeavored to give a comprehensive view of the character of the North Pennsylvania Railroad, and of the surveys and locations made by your engineers throughout its entire extent.

During the past year, comparatively little field-work has been done beyond the points of intersection of the Lehigh Valley Road, near Bethlehem and Freemansburg. Full topographical surveys were made in reference to the best mode of communication with Allentown, and revisions of the locations at some points on the Lehigh and North Branch of the Susquehanna, especially between Waverley and Athens; between Towanda and Wysox: and at the Frenchtown and Horse-Shoe Bends, where locations were made avoiding the tunnels originally proposed. An instrumental examination was also made of an interior line avoiding the valley of the North Branch between Towanda and the mouth of Mahoopy. This route had been urged upon my notice by gentlemen of much intelligence and respectability, but it proved to be altogether inferior to the valley line previously selected.

My special reports made in April and June last, render it unnecessary for me to dwell upon the results of these examinations, especially as the policy of the Board, in view of the present financial crisis, makes it improbable that any extension of the contracts beyond Bethlehem will be undertaken during the coming year. In the meantime a large amount of office work has been done, in connection with the field labors of the corps on the entire route, all of which is recorded with the maps, profiles and estimates, so as to be readily available, when better times shall justify the prosecution of the important work you have undertaken.

A year since, I expressed the hope that we should open the road to Wissahickon in the fall of 1854, and to Bethlehem early in 1855, but a variety of causes beyond my control have disappointed me in these expectations. Throughout the first eight months, the utmost exertions of the contractors could not obtain a sufficient supply of laborers, and our heaviest sections had to be worked with less than half the force that should have been employed. In addition to this, the rock on many of these sections was greater in quantity, and harder than had been expected, and in some of the cuts, the springs of water prevented a free use of powder and greatly retarded the work. The same causes have also increased the cost of the road. I had endeavored to provide for the insufficient prices on some of the sections, by large allowanees in my estimates, above the rates at which experienced contractors had been willing to undertake the work, but no ordinary caution will cover such contingencies as have arisen. Labor and provisions, horse flesh and horse feed, have been excessively high.

I have prepared tabular statements, herewith submitted, showing the whole amount of materials on each section, with the quantities done, and remaining. Also tables showing the estimated cost of each section, with its financial condition. In these statements, which are brought down to December 1st, and include the work done, and payments made for November, I have divided



the line arbitrarily into three divisions. The first extends from the city track at Cherry street, to section 20 inclusive, being the whole distance to the point where the road from Plymouth to Gwynedd crosses the track: The second division includes our two heaviest sections, Nos. 21, 36, and those intermediate. The third includes sections Nos. 37 to 55, and extends to the Lehigh Valley Road at Bethlehem.

Upon the profiles of the line, the condition of the work is also shown to the same date, December 1st, 1854; the cuttings and fillings on every section being shaded so as to indicate the amount of work done and remaining.

The condition of these divisions, as regards graduation and masonry, are briefly shown below, viz:

	Work done.	Remaining.	Total.
FIRST DIVISION, SECTIONS 3 TO 20.			
Rock excavation, cubic yards,	329,070	37,550	366,620
Quicksand, “	15,500	4,200	19,700
Other excavation, “	365,535	15,600	381,135
Embankment, 500 ft. haul, c. y'ds,	623,864	43,800	667,664
Masonry and brickwork, perches,	19,835	1,043	20,878
SECOND DIVISION, SECTIONS 21 TO 36.			
Rock excavation, cubic yards,	236,187	208,328	444,515
Shafts and tunnels, “	13,155	42,866	56,021
Other excavation, “	127,683	99,250	226,933
Embankment, “	390,959	386,925	777,884
Masonry and brickwork, perches,	10,068	7,150	17,218
THIRD DIVISION, SECTIONS 37 TO 55.			
Rock excavation, cubic yards,	182,423	218,548	400,971
Other excavation, “	263,890	184,585	448,475
Embankment, “	349,515	437,664	787,179
Masonry and brickwork, perches,	9,261	7,401	16,662

The total quantities on the whole main line from Philadelphia to Bethlehem, are as follows, viz:

SECTIONS 3 TO 55 INCLUSIVE.	Work done.	Remaining.	Total.
Rock excavation, cubic yards,	747,680	464,426	1,212,106
Quicksand, “	15,500	4,200	19,700
Shafts and tunnels, “	13,155	42,866	56,021
Other excavation, “	757,108	299,435	1,056,543
Embankment, “	1,364,338	868,389	2,232,727
Masonry and brickwork, perches,	39,164	15,594	54,758

The financial condition of these divisions, and of the graduation and masonry of the whole road, is shown in the following statement:

	1st Division, Secs. 3 to 20.	2d Division, Secs. 21 to 36.	3d Division, Secs. 37 to 55.	Total, Secs. 3 to 55.
	Dolls.	Dolls.	Dolls.	Dolls.
Estimated cost,	503,000	777,000	541,187	1,821,187
Work done,	448,364	332,555	243,711	1,024,630
Remaining,	54,636	444,445	297,476	796,557
Paid in cash,	365,402	282,470	207,173	855,045
Paid in stock,	11,700		4,900	16,600
Retained per centage,	71,262	50,085	31,638	152,985
To be paid in cash,	65,198	368,130	271,164	704,492
To be paid in stock,	60,700	126,400	57,950	245,050

It must be noticed that in the stock payments I have only included those provided for in *existing contracts*. In closing up and canceling contracts on suspended work, a considerable amount of stock subscriptions were nominally lost to the Company, which can be recovered when the work is re-let.

Of the fifty-five sections between Philadelphia and Bethlehem, the following sixteen are now completed: Nos. 1, 2, 3, 4, 5, 6, 7, 9, 12, 16, 17, 18, 31, 41, 46, 47. The following eleven will

be finished by April next: Nos. 8, 10, 11, 13, 14, 15, 19, 20, 33, 48, 51. In order to reduce our monthly expenditures and to save interest, the work has been suspended by amicable arrangement with the contractors on the following fifteen sections: Nos. 22, 23, 24, 25, 26, 27, 28, 29, 32, 37, 38, 39, 42, 43, 44. On the remaining fourteen sections the construction is progressing with moderate force, with the exception of Nos. 21 and 36, which should be pushed with the utmost vigor; the first forming the only obstacle in the way of completing the road to Doylestown and Sellersville by the fall of 1855, and the latter limiting the time of opening the road to Bethlehem. Both these sections are in the hands of able and energetic contractors, who have all their arrangements now completed to enable them to prosecute their contracts vigorously.

No material changes have been made in the gradients and alignment of the part of the road now in progress. In accordance with the instructions of the Board I have reduced the *earth cuts* to single track width, except where more material than would be thus furnished is required to make the adjoining embankments: and the banks have also been reduced to single track width, except where the neighboring cuts furnished more material than was required for this purpose. The saving in first cost thus produced is less than might have been expected, for much work was done prior to this resolution; and in addition to this, the numerous cuts which contained rock, had to be made wide enough for double track; and the cuts and fills had originally been arranged, as far as possible, to balance each other.

A very large proportion of the road, including all the most costly part, will still be graded for a double track, and the remainder may be made so readily, in any single season, without delaying the working of the road.

In three instances I have substituted trestle works for embankments; viz. on sections Nos. 15, 20 and 21, and it is possible that the progress of the work may indicate the propriety of introducing them at two or three points hereafter, though the high price of timber on our line renders this improbable.

On section No. 4 a handsome bridge of ornamental brick-work, called by the Board the "Aramingo Bridge," has been constructed over the valley of Gunner's Run. It is 43 feet high and has five semi-circular arches of thirty feet span. The parapets are coped with brown sand-stone and the arches spring from a water table of the same material. This structure being near the built portion of the city, and in full view of Second street, appeared to require some architectural embellishment. It is, however, the only work upon which I have thought it advisable to sacrifice anything to unnecessary ornament. All our other masonry is substantial, but perfectly plain. Upon the same section is a bridge over the Reading Railroad 38 feet span, consisting of two plain wrought-iron girders resting on brick abutments. A similar iron bridge, on stone abutments, carries our road over the Willow Grove turnpike at Cheltenham Hills.

Our other bridges, with the exception of those of small span, and not requiring particular notice, are as follows, viz: One arched Howe Truss, across Saucon, on section 54, 150 feet span. One on section 34, across Perkiomen, three spans of 75 feet. Two on Sandy Run, single spans of 38 feet and 45 feet respectively. Two on Wissahickon, each two spans of 45 feet. One on Saucon of two 45 feet spans; and another of three 45 feet spans. For the spans of 45 feet and less, I have adopted the plan of trussed girders counterbraced.

The most important and difficult cuttings on the southern part of the road, and those which have particularly interfered with its earlier completion, are at Oak Lane, on sections 8 and 9; and at Edgehillville, on sections 13 and 14. The first is 2,400 feet long, with 37 feet extreme depth of cutting, chiefly gneiss and granite, and much of it hard. Since laborers in sufficient numbers could be obtained, this cut has been worked skillfully and vigorously. Four thousand yards were taken out in the month terminating November 30th; and at that date 13,600 yards remained in the cut.

The Edgehillville cut is 3,000 feet long and has an extreme

depth of 47 feet. The rock is chiefly mica slate on edge. Edge-hill at this place divides the waters which flow into the Delaware from those which flow into the Schuylkill. On the southern flank of the cut is a very bad quicksand of considerable extent. The plans adopted by me for overcoming this dreaded and treacherous material, have been thus far entirely successful, and promise hereafter a safe and permanent road-bed.

The Gwynedd cut, on sections 21 and 22, is the most formidable on the road; its length being 3,600 feet, and the extreme depth 60 feet. To save expense and expedite the work, 500 feet of this cut was changed into a tunnel, worked from a shaft, and 400 feet of the heading of this tunnel was out December 1st. The rock is variable in character, much of it is hard, and some extremely hard, and the difficulty of removing it north of the tunnel is greatly increased by the springs of water. Since laborers could be obtained, this cut has been pushed with great skill and energy; and the preparations of the contractors are on a scale commensurate with its importance.

The Nigger Hill cut, on sections 30 and 31, is 2,300 feet long, with an extreme depth of 34 feet. The rock is generally favorable.

On section No. 35 there are two embankments containing 156,800 cubic yards, of which a large proportion is obtained outside of the road-bed, and in very difficult ground.

Section No. 36 is the most costly on the road, as it includes the tunnel through Landis' Ridge. Its management has been peculiarly unfortunate. The original contractors, who came to us with strong recommendations for experience and ability, disappointed my just expectations, and finally gave up the work in August last, after much precious time had been lost by their imperfect arrangements. It was re-let to a new firm, who purchased the stock and fixtures of the former contractors, and made arrangements for a new steam engine for pumping and hoisting at the shaft, that already provided being manifestly unequal to the service. In a few weeks they put the whole sec-



tion in excellent working condition, and had a large force employed, when the cholera broke out among their men with much malignity, strangely confining its ravages to this section alone. In accordance with the advice of a skillful physician sent from Philadelphia, Dr. Jas. Darragh, whose attention to the sick deserves all praise, I found it was my duty to stop work on the section, and scatter the men. Unfortunately this was not done until the death of skilled mechanics had made it necessary to put at the old shaft-engine an inexperienced hand, by whom the boiler was burnt out long before the new machinery was ready to be put up. Three months have thus been lost on two breasts worked from the shaft, and we are only now in condition to drive this section as it should be worked, the new shaft-machinery being of the most approved and efficient character. The loss in time to the Company and in money to the contractors has been severe, but unavoidable, and should be looked upon as a Providential delay which human foresight could not have provided for. The tunnel is 2,150 feet long, and the rock, though generally hard, cannot be considered unfavorable, as the roof is mostly sound and safe. The cut south of the tunnel is all done; that north of the tunnel is very hard and wet, with the same disadvantage existing as at the north end of the Gwynedd cut, that the gradient descends toward the tunnel. The greatest distance to be driven between two headings on December 1st was 775 feet.

Between sections 36 and 45, the line crosses the Quakertown flat lands, and also passes the district north and south of them, known as "The Rocks," from the fragments of green-stone trap which cover the surface of the earth. We encounter this rock in place on several sections, and it is in some cases extremely hard.

Section No. 45 includes the deep cut at Sames' Gap, between the waters of Tohicken and Saueon. It is 3,300 feet long, with an extreme depth of 47 feet. The rock is not difficult.

Section No. 54 includes the deep cut through the point of the South Mountain, near Bethlehem, and a large embankment and

bridge over the Saucon valley. The rock is favorable. The cut is 3,400 feet long ; extreme depth 43 feet.

The supply of cross ties for the superstructure of the road was a subject which received my early attention, and contracts for forty thousand, deliverable in Philadelphia, were made with parties supposed to be responsible, more than a year since. For the remainder, I expected to obtain proposals on the line of the road. In this I have been in some measure disappointed, in consequence of the extravagant value put upon their timber by the farmers. Contracts for about 13 miles have been made, and the ties are in process of delivery on the Saucon and Tohickan, but for about 30 miles of the southern end, we shall probably have to depend on ties taken from Philadelphia. The first contractors only delivered 8,600 of their 40,000, and the low water on the Delaware, and the sickly season on the Susquehanna, have interfered greatly with my arrangements for making up the complement required here. I have, however, obtained enough to lay the road to Cheltenham Hills this winter, and expect, with the early spring freshets, enough to carry our track to the Plymouth Road.

From the Cohoquinoque Station, at Front and Willow streets, to the Cohocksink outer depot, at Washington and Cherry streets, a first class city railroad, with grooved rails, has been laid down, forming a connection with the Willow street road, and through it with all the other roads entering Philadelphia from the South and West and North-west.

In Front street, Germantown road, and Washington street, there is a double track ; but for 1,580 feet on Second and Cadwallader streets, there is only a single track, these streets being too narrow for two tracks. The paving of Front street and Germantown road was so irregular and out of repair, that it appeared necessary to repave them from curb to curb throughout, which has increased the cost of our city track beyond my anticipations.

The track-layers are now progressing with their work, and as the materials are prepared, it will go on as steadily as the weather will permit.

In accordance with the views of the Board, I have altered and fitted up the old warehouse at Front and Willow streets, upon the Cohoquinoque property, as a freight and passenger station. It is now ready for use, and is as convenient and commodious as circumstances permitted.

Upon the Cohocksink property, west of Washington street, have been constructed an engine-house and machine-shop combined, with a blacksmith's shop attached. They will be fitted up with a stationary engine, and the necessary machinery and tools for repairing engines and cars. The shops are under roof, and nearly ready for occupancy.

A moderate outfit of cars and engines is in progress, and will be ready in due season. The locomotives are from the works of M. W. Baldwin & Co., and will burn anthracite coal. The cars, both for freight and passengers, are built by Kimball & Gorton; the wheels and axles by A. Whitney & Son; the stationary steam engine by I. P. Morris, and the shop machinery and tools by Bancroft & Sellers; our iron rails and wrought-iron chairs are manufactured by Reeves, Buck & Co.; so that citizens of Philadelphia reap the advantage of an important part of our expenditures. It is but justice to the manufacturers above enumerated, to say that in no part of the United States can their superiors be found.

The four omnibus horse cars purchased for the city track were built by Eaton & Gilbert, of Troy, who have furnished a great many for the New York and Brooklyn city railroads, and consider these the best they have ever constructed.

In regard to way stations on the route of the road, I have already advised that they should be numerous, and not of an expensive character. Private enterprise in a district so populous and wealthy as that traversed by your road, will soon alter greatly the relative importance of different points; and I have no doubt that the first division from Philadelphia to Plymouth Road, will develop an amount of trade and travel that will astonish the most sanguine, under a liberal and judicious management. Until this development takes place, it is impossible



to determine the extent of the accommodations which will ultimately be required at particular stations, and temporary buildings will generally best meet the exigencies of the case.

The Branch Road to Shimersville is making good progress. This might be called the Easton Branch, as it connects us with that important town through the Lehigh Valley Railroad, making the distance from Philadelphia to Easton only  $61\frac{1}{2}$  miles; while the distance between the same points by the Belvidere Road is 80 miles. By the North Pennsylvania and the Lehigh Valley Railroads, the distance from Philadelphia to Allentown is  $58\frac{9}{16}$  miles; *and no practicable line so short as this* has yet been found via Norristown and the Valley of Perkiomen; while the distance by the Belvidere route is 96 miles. The graduation of the Doylestown branch has not yet been commenced.

The following general estimate of the cost of the road, with a full statement of its present condition, is condensed from detailed tables herewith submitted; in which the work in progress is calculated at existing contract prices, with an addition of about \$47,000 to cover anticipated advances and contingencies. On the suspended or abandoned sections, such prices have been assumed as experience on the route indicates to be liberal. The stock payments can be increased without difficulty forty thousand dollars, when the remaining work shall be put under contract, and the cash payments reduced to the same extent.

It only remains for me to express my thanks to the members of my corps, now greatly reduced in number, for their faithful labors, and especially to Mr. Strickland Kneass, Division Engineer, whose services the Company will shortly lose. It gives me sincere pleasure to say, that in an intimate professional connection of several years' standing, here and elsewhere, I have always found him equal to the occasion, never wanting in his duties as an engineer, or his conduct as a gentleman.

Very respectfully submitted,

EDW. MILLER,  
*Chief Engineer.*

December 28, 1854.

*Estimated cost of The North Pennsylvania Railroad, with the present condition of the work.*

	Total cost.	Total work done.	Remaining.	Amount paid.	Retain'd.	Stock paid.	Stock to pay.	Cash to pay.
City track, . . . . .	\$55,911	\$54,638	\$1,273	\$51,814	\$2,824	\$500		\$4,097
Graduation and masonry, Sections 3 to 55, .	1,821,187	1,024,630	796,557	871,645	152,985	16,600	\$245,050	704,492
Ballast, . . . . .	80,700	10,095	70,605	8,004	2,091	300	2,350	70,346
Bridge superstructures, . . . . .	30,900	5,716	25,184	4,917	799	1,150		25,988
Road superstructure, . . . . .	574,291	62,597	511,694	53,458	9,139	550	650	520,088
Stations, shops, &c., . . . . .	55,500	18,021	37,479	16,936	1,085	500		38,564
Equipment now required, : . . . .	95,000	45,000	50,000	7,156	37,844	3,000	10,850	76,994
Increased equipment on completion, . .	85,000		85,000					85,000
Engineering, . . . . .	63,924	49,099	14,825	49,099				14,825
Branch to Doylestown, . . . . .	178,327	31,779	146,548	31,779			14,850	131,698
Branch to Freemansburg, . . . . .	59,260	11,714	47,546	9,210	2,504		6,000	44,050
	\$3,100,000	\$1,313,289	\$1,786,711	\$1,104,018	\$209,271	\$22,600	\$279,750	\$1,716,132

# APPENDIX,

*Containing the first general Report, and the first special Report  
of Edward Miller, Esquire, Chief Engineer, to the President  
and Directors of the North Pennsylvania Railroad Company.*

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Engineer Department,

April 30th, 1853.

THOS S. FERNON, Esq.,

President Philadelphia, Easton & Water Gap R. R. Company.

SIR:—The examinations I have made of the region between Philadelphia and the Lehigh river, and a careful consideration of its topography, confirm the conclusions of your former chief engineer, Mr. Foster, as to the proper route of your road from the Lehigh to White Marsh. From the latter point to Philadelphia, several routes have been located, but the calculations are incomplete, and arrangements for right of way may have an important bearing on the decision. Near the Lehigh, also, a final location cannot be made until it is ascertained whether an advantageous business connection can be arranged with the Lehigh Valley Rail Road Company.

From Hellertown to the vicinity of White Marsh, on the Wissahickon, a distance of thirty-six and a half miles, the road is ready for contract, and as a portion of the work is quite

difficult, I recommend that it shall be commenced as soon as possible.

The route now recommended for your consideration and action, leaves the Lehigh by the Saueon Valley, which is followed to the summit at Sames' Gap—thence through the “flat lands” east of Quakertown to Rocky Ridge at Coffle's Gap; thence through Landis' Ridge by a tunnel, the length of which will be about eighteen hundred feet, and across the north-east branch of Perkiomen, near Sellersbury. It then ascends Derstein's Run to the summit between Perkiomen, Skippack and Neshaminy, and crosses Hatfield Plains to the Wissahickon, the valley of which is pursued to the vicinity of White Marsh, where all the lines which will require future consideration will converge.

No line varying materially from this can be obtained, except those by the Perkiomen and Delaware, which are not admissible on account of their greatly increased length. An Air Line would be generally east of our location, but by diverging from the straight course, we avoid the very broken and difficult ground produced by the branches of the Neshaminy and Tohickon, obtaining across the extreme heads of these streams two straight lines, each of which is five miles long.

An estimate of the cost of the graduation and bridges, with the tables of gradients and curvatures, is herewith submitted.

It will be seen that the proportion of straight to curved lines exceeds three to one, and that there will be no curvature of less than 1,637 feet radius. The whole cost of the work now proposed to be contracted for is estimated at \$735,575, or \$20,153 per mile. The estimates are intended to be very liberal, and to cover the graduation and bridging for a first class double track road, without temporary structures, the bridges to be stone, brick or iron.

The cost of the remaining distance between here and the Lehigh, will not exceed the average per mile of that now before you.

The whole distance from Philadelphia to the Lehigh will not exceed 55 miles.

The maximum gradient ascending southward, the direction of the heavy tonnage, is 52.8-10 feet per mile on straight lines. This will be required only at two points—the head of the Saucon and the ascent of Derstein's Run. Descending southward, the steepest gradient is 60 feet per mile, also at two places.

The country through which your road passes is healthy, populous, and very productive. It abounds in mineral and agricultural wealth; and I feel no doubt that the stock would be an excellent one, even if the railroad should terminate at the mouth of Saucon. Very few roads will equal it in local business. I need not dwell upon its necessity to Philadelphia, nor upon the value of the regions beyond, which will seek it as their grand trunk line; for I believe all are now convinced of this, and that it cannot fail to be appreciated and fostered as one of the most important avenues which Philadelphia has still to open.

Very respectfully,

EDWARD MILLER,

*Chief Engineer.*

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Engineer Department,

*June 6th, 1853.*

THOS. S. FERNON, ESQ.,

President Philada., Easton & Water Gap R. R.

DEAR SIR: The decision in regard to the contracts south of section No. 30, was suspended in order to give an opportunity of investigating more fully the character of a line which I had projected in the vicinity of Gwynedd, in order to reduce curvature and distance. The following statements, together with the

maps herewith submitted, will give the necessary information in regard to details.

The straight line across Hatfield Plains, formerly 25,800 feet long, will be increased to 32,400 feet, and then curving 21 degrees upon a radius of 11,460 feet, it passes into another tangent of 14,600 feet, running down the valley of Wissahickon. As a curve of this kind is practically equal to a straight line, this is almost the same as a tangent  $9\frac{3}{4}$  miles long.

The new line saves 7,015 feet of distance and 259 degrees of curvature, of which latter a considerable amount was on a radius of 1,637 feet. It is very important to avoid curvature, at all times; but especially on a road like this, terminating in a great and growing city, and traversing a region healthy, fertile, populous, and unsurpassed for picturesque beauty of scenery. In addition to the great trade which must flow into our road from the Lehigh, Delaware and Susquehanna valleys, a local passenger business of great extent will accumulate upon the southern half of the main stem to the Lehigh, requiring numerous trains and frequent stoppages; and consequently making it very important to avoid all unnecessary curvature, both on the score of speed and safety.

Should the cut-off line be adopted, the shortest radius of curvature for twenty-five miles from Philadelphia will be 2,865 feet.

The saving of distance will tell in comparison with the Delaware and Perkiomen routes, our great advantage over them consisting in the directness of our road.

The cost of the new line is, however, so formidable, that I should hesitate to recommend it to a corporation in danger of being crippled for means to carry on its operations. Of this, the members of the Board are better judges than myself.

The cost of graduation and masonry is estimated at \$127,100 more than the old line, and even with two tracks laid, the excess of the new line will be \$100,500. It would be easy to show by calculation that the results obtained would justify this expendi-



ture on a road of large traffic, but the practical results upon a great line with which we are all familiar, will perhaps be more satisfactory.

The following statement is accordingly taken from the Report of the Reading Railroad Company, for 1852 :

Repairs and renewals of road-way, (p. 6)	-	-	\$124,596
Transportation of coal, (p. 32)	-	-	583,827
Do merchandise, do	-	-	58,692
Do passengers, do	-	-	60,438
			<hr/>
			\$827,553
			<hr/>

This includes only the actual cost of maintaining the road, exclusive of bridges ; and the transportation on the main line, exclusive of branches. It is also exclusive of terminal and general expenses. Divided by 93 for the number of miles, it gives \$8,898 per mile per annum ; which is equal to a capital of \$148,300, the value of a mile saved on the Reading Road.

In the same proportion, the 7,015 feet saved at Gwynedd would amount to over \$197,000, and if the curvature be added, a result much more than double the estimated additional cost would be attained.

It is proper to remark that an ascending gradient in the direction of the heavy trade is required on the cut-off line, but as a similar gradient has to be encountered only half a mile off, in ascending to the Wissahickon summit, and as the additional elevation is quite moderate, it is not of practical importance.

I recommend the adoption of the cut-off line.

Very respectfully,

EDW. MILLER,

*Chief Engineer.*

